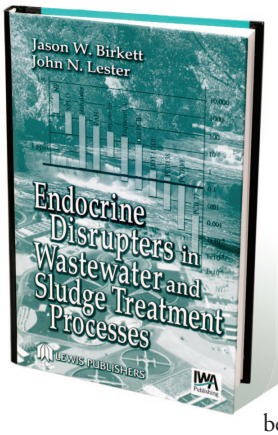
Announcements | Book Review

Endocrine Disruptors in Wastewater and Sludge Treatment Processes



Edited by Jason W. Birkett and John N. Lester
Boca Raton, FL:Lewis Publishers, 2003.
295 pp. ISBN: 1-56670-601-7,
$99.95 cloth.

Concern over exposure to endocrine-disrupting chemicals (EDCs) and their potential impacts on wildlife and humans has seen a renaissance in the last decade. The endocrine system controls a range of critical biologic functions, including reproduction and early development. The system operates via the production and secretion of chemical substances within the body; hence, it may be particularly vulnerable to interference by exogenous chemicals. Subsequent effects may initially be difficult to detect but can be serious and long lasting. A vast number of chemicals are suspected to be EDCs, including natural and synthetic hormones excreted by humans, industrial/household chemicals, and their degradation products. The U.S. Environmental Protection Agency has identified approximately 87,000 chemicals for screening. Although the disrupting potency of some chemicals may be predictable based on their structural similarity to hormones, others are less obvious. The situation is complicated by the fact that mixtures of some EDCs have been shown to interact toxicologically.

Wastewater eventually receives most, if not all, of these chemicals, so a greater understanding of the fate of EDCs within these facilities is sorely needed. Wastewater treatment plants (WWTPs) face the task of reducing a tremendous variety of chemicals to levels that present no significant health risk—an onerous task, considering the complexity of influents and our ignorance of what an EDC actually is, let alone the concentrations that might prove deleterious. The massive effluent volumes released by treatment plants and our subsequent reuse of water ensure continuous exposure of humans and wildlife to a complex mixture of EDCs. Additionally, WWTPs rely heavily on the partitioning of hydrophobic pollutants to solids in the purification process. The sludges generated are increasingly applied, often on agricultural and public lands. The goal is to recycle valuable nutrients and organic carbon contained within, as well as reduce disposal costs. In the United States this constitutes over half of all sewage sludges produced annually.

Endocrine Disruptors in Wastewater and Sludge Treatment Processes provides a logical framework for examining these complex issues and processes. The authors focus on organic EDCs and generally take a chemical-by-chemical approach to the discussion. A diverse collection of EDCs is examined, including naturally occurring phytoestrogens, historical contaminants such as PCBs and pesticides, and emerging chemicals (e.g., brominated flame retardants). The diversity and fate of pharmaceuticals, of increasing concern, are not discussed in depth. The book addresses a diversity of topics, including EDC sources; properties and effects; screening and measurement techniques for EDCs; their fate during wastewater treatment; concentrations encountered in effluents, sludges, and drinking water; and management strategies. An overview of regulatory approaches applied in Europe, North America, and elsewhere is also provided. The book is largely free of technical errors. Although some chapters were team written by different authors, they flow logically and are well edited. Each chapter is graced with an abundance of up-to-date references. All the authors are from the United Kingdom and thus, not unexpectedly, a few papers that may be of particular interest to North American readers were not cited. For example, recent work in the United States suggests that environmental levels of some EDCs are at least an order of magnitude greater in sewage sludges here than in Europe. Also, to quote the authors of Chapter 5, "sewage sludge is by far the largest of the by-products resulting from wastewater treatment." Unfortunately, only two pages are devoted to the subject of the fate and regulation of EDCs in land applied sludges.

However, *Endocrine Disruptors in Wastewater and Sludge Treatment Processes* succeeds extremely well in introducing the technically oriented reader to the expanding area of EDCs, their fate in wastewater treatment processes, and their presence in sludge, surface, and drinking waters.

ROBERT C. HALE

Robert C. Hale is a Professor in the Department of Environmental and Aquatic Animal Health at the Virginia Institute of Marine Science, College of William & Mary, and was an Environmental Research Chemist for Mobil Corporation. His research focuses on the analysis, sources, behavior, and effects of organic contaminants in effluents, sludges, and the environment.

Announcements | New Books

Achieving Sustainable Freshwater Systems
Marjorie M. Holland, Elizabeth R. Blood, Lawrence R. Shaffer
Washington, DC:Island Press, 2003. 312 pp.
ISBN: 1-55963-928-8, $65 cloth;
1-55963-929-6, $30 paper

The Automotive Industry and the Environment
P. Niewenhuis, P. Wells, eds.
Boca Raton, FL:CRC Press, 2003. 272 pp.
ISBN: 0-8493-2072-0, $179.95

The Cartagena Protocol on Biosafety: Reconciling Trade in Biotechnology with Environment and Development?
Helen Marquard, Christoph Bail, Robert Falkner, eds.
London:Earthscan Publications, 2003. 608 pp.
ISBN: 1-85383-840-3, $33.50

Casarett & Doull's Essentials of Toxicology
Louis J. Casarett, John B. Watkins, Barbara J. Streibel, eds.
New York:McGraw-Hill Professional Publishing, 2003. 512 pp. ISBN: 0-07-138914-8, $49.95

Cytokine Protocols
Marc De Ley
Totowa, NJ:Humana Press, 2003. 315 pp.
ISBN: 0-89603-948-X, $99.50

Desk Study on the Environment in the Occupied Palestinian Territories
United Nations Environment Programme
Stevenage, UK:United Nations Environment Programme, 2003. 188 pp. ISBN: 92-115-8618-6, $30

The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation
Joan Martinez-Alier
Northampton, MA:Edward Elgar Publishing, 2003. 328 pp. ISBN: 1-84064-909-7, $95 cloth, 1-84376-486-5, $540 paper

Evidence Based Health Policy: Problems and Possibilities
Vivian Lin, Brendan Gibson
New York:Oxford University Press, 2003.
304 pp. ISBN: 0-19-551551-X, $42.50

GIS, Environmental Modelling and Engineering
Allan Brimicombe
London:Taylor & Francis, 2003. 328 pp.
ISBN: 0-415-25922-3, $95

Integrated Natural Resources Management: Linking Productivity, the Environment and Development
B. M. Campbell, J. A. Sayer
New York:CABI Publishing, 2003. 320 pp.
ISBN: 0-85199-731-7, $60

International Handbook of Foodborne Pathogens
Marianne D. Miliotis, Jeffrey W. Bier, eds.
New York:Marcel Dekker, 2003. 688 pp.
ISBN: 0-8247-0685-4, $225

Introduction to Environmental Soil Physics
Daniel Hillel
San Diego, CA:Academic Press, 2003. 480 pp.
ISBN: 0-12-348655-6, $59.95

Inventing for the Environment
Arthur Molella, Joyce Bedi, eds.
Cambridge, MA:MIT Press, 2003. 424 pp.
ISBN: 0-262-13427-6, $29.95

Micrometastasis
Klaus Pantel, ed.
Boston, MA:Kluwer Academic Publishers, 2003.
208 pp. ISBN: 1-4020-1155-5, $115

Natural Production of Organohalogen Compounds
G. W. Gribble, ed.
Heidelberg, Germany:Springer-Verlag, 2003.
312 pp. ISBN: 3-540-41842-3, $189

Phytoremediation
D. T. Tsao, ed.
Heidelberg, Germany:Springer-Verlag, 2003.
206 pp. ISBN: 3-540-43385-6, $163.75

Progress in Nucleic Acid Research and Molecular Biology, Vol. 73
Kivie Moldave, ed.
San Diego, CA:Academic Press, 2003. 485 pp.
ISBN: 0-12-540073-X, $129.95

World Cancer Report
B. W. Stewart, P. Kleihues
Geneva, Switzerland:World Health Organization, 2003. 351 pp. ISBN: 92-832-0411-5, $25.20